Claim amendment under article 34.

1. (Amended)

A beam measuring device comprising:

a magnetic shielding part, shielding an outer magnetic field; and

a plurality of magnetic field sensors, arranged in a shielding space which is formed by the magnetic shielding part, the magnetic field sensors measuring a magnetic field which a beam current to be measured generates;

wherein the magnetic field sensor includes a plurality of magnetic field collection mechanisms which collect magnetic fields which the beam current to be measured generates;

wherein the magnetic field collection mechanisms are arranged such that the beam current is concentrated on a predetermined region by interrupting a superconductive surface shielding current within a range of a fixed length in a plane which the beam current penetrates except for a predetermined region;

wherein the magnetic field collection mechanism is a cylindrical structural body which has at least a surface thereof formed of a superconductive body and includes a bridge portion which has only a portion thereof constituted of a high-temperature superconductive body on an outer peripheral portion; and

wherein the magnetic field collection mechanism concentrates a superconductive surface shielding current which the beam current generates in the vicinity of a plurality of

magnetic field sensors.

2. (Amended)

The beam measuring device according to claim 1, wherein an insulator is arranged at the outer wall of the cylindrical structural body in a state that the respective bridge portion is partitioned so that output of each of the magnetic field sensors can easily reflect location of the beam positions.

3. (Amended)

The beam measuring device according to claim 1, wherein a normal conductor is arranged at the outer wall of the cylindrical structural body in a state that the respective bridge portion is partitioned so that output of each of the magnetic field sensors can easily reflect location of the beam positions.

4. (Deleted)

5. (Deleted)

6. The beam measuring device according to any one of claims 1 to 5, wherein output signals of the plurality of magnetic field sensors are connected to an arithmetic operation circuit which calculates and outputs a current value and a position of the beam current.

7. The beam measuring device according to any one of claims

1 to 6, wherein output signals of the plurality of magnetic field sensors are connected to an arithmetic operation circuit which calculates and outputs a current value and a position of the beam current while canceling noise signals having a same phase as the output signals of the plurality of magnetic field sensors.

8. The beam measuring device according to any one of claims 1 to 7, wherein the magnetic field sensor is a SQUID.

9. The beam measuring device according to any one of claims 1 to 8, wherein the magnetic shielding part, the magnetic field sensor and the magnetic filed collection mechanism include parts which are formed of a high-temperature superconductive body.

10. The beam measuring method which uses the beam measuring device described in any one of claims 1 to 9, arranges the beam measuring device on the beam line which is radiated to a material to be treated from an ion source or an electron beam source, and measures the beam current value of the beam line and the position of beams based on outputs of the magnetic field sensors.

11. The beam measuring method according to claim 10, wherein the beam current value of the beam line and the beam position are simultaneously measured.

12. A beam control method comprising:

a measurement step which measures a beam current of beams which are generated by an ion source or an electron beam source using the beam measuring method described in claim 10 or 11; and

a control step which feedbacks the beam current value and positions of beams which are obtained by the measuring step or both of the beam current value and the positions of beams to control parameters of the ion source, the electron beam source, an analysis electric magnet, a part for applying an electric field and a magnetic field to beams.

13. The beam control method according to claim 12, wherein the beam radiation method includes a radiation step which radiates the beam current which is controlled using the control parameters obtained in the control step of the beam in claim 12 to a material to be treated.

14. A beam radiation device which includes the beam measuring device described in any one of claims 1 to 9.

15. A material to be treated which is manufactured or inspected using an ion injection device, an electronic beam exposure device, an accelerator or an electron beam vapor deposition device which includes the beam measuring device described in any one of claims 1 to 9.